VPDES PERMIT FACT SHEET

This document gives pertinent information concerning the re-issuance of the VPDES permit listed below. This permit is being processed as a minor, industrial permit. The effluent limitations contained in this permit will maintain the Water Quality Standards of 9 VAC 25-260 et seq. The discharge results from the operation of tobacco material reclaimed for use in the cigarette manufacturing process. This permit action consists of updating the permit to reflect changes in the Water Quality Standards, the permitting boilerplate, reduction of monitoring, and the addition of a special condition for an alternative dechlorination. SIC Code: 2141.

1.	**Facility Name:**	Phillip Morris USA Inc – Park 500 Plant
	Mailing Address:	P.O. Box 26603 Richmond, VA 23261
	Location	4100 Bermuda Hundred Road Chester, VA 23836 Chesterfield County
2.	**Permit Number**	VA0026557
	Existing Permit Expiration Date:	June 16, 2009
3.	**Owner Contact Name:**	Mr. Tony Nobinger
	Title:	Plant Area Leader
	Telephone No:	804-751-1855
4.	**Application Complete Date:**	March 13, 2009 (Updated lab sheets email from Mark Davis)
	Permit Drafted By:	Jaime Bauer, Piedmont Regional Office
	Reviewed By:	Gina Kelly **Date:** April 22, 2009
	Reviewed By:	Ray Jenkins **Date:** April 30, 2009
	Reviewed By:	Curt Linderman **Date:** May 4, 2009
	Public Notice Dates:	First Publication Date: June 5, 2009 Second Publication Date: June 12, 2009
	Public Comment Period:	June 5, 2009 to 4 pm on July 6, 2009
	Newspaper:	Richmond Times-Dispatch
5.	**Receiving Stream Name:**	James River
	Basin:	James River (Lower)
	Subbasin:	None
	Section:	1o
	Class:	II
	Special Standards:	PWS, bb
	River Mile:	2-JMS085.73
	7-Day, 10-Year Low Flows:	501 MGD 775 cfs
	1-Day, 10-Year Low Flows:	446 MGD 689 cfs
	30-Day, 5-Year Low Flows:	712 MGD 1102 cfs
	30-Day, 10-Year Low Flows:	641 MGD 992 cfs
	7-Day, 10-Year High Flows:	1264 MGD 1956 cfs
	1-Day, 10-Year High Flows:	1068 MGD 1653 cfs
	30-Day, 10-Year High Flows:	1550 MGD 2399 cfs
	1-Q30 Flows	377 MGD 583 cfs
	Harmonic Mean Flow:	2109 MGD 3263 cfs
	High Flow months:	January through May

Tidal: Yes
On 303(d) List: Yes
Outfall 001 discharges into the tidal portion of the James River. The flow frequencies indicated above are based on the freshwater segment of the river at the fall line just above the tidal zone.
See Flow Frequency Memo dated March 4, 2009 (**Attachment 1**)

6. **Operator License Requirements**: Class I
(9 VAC 25-790-300)

7. **Reliability Class**: Not Applicable
(9 VAC 25-790-70)

8. **Permit Characterization:**

__X__ Private ___ Federal ___ State ___ POTW ___ PVOTW

_____ Possible Interstate Effect ___ Interim Limits in Other Document

9. **Table 1: Wastewater Flow and Treatment**

Outfall Number	Discharge Source	Treatment	Design Flow
001	Reclamation of tobacco materials for the cigarette manufacturing process. Other associated equipment includes: (2) oil/water separators, (3) boilers, and a water treatment plant.	Pretreatment (bar racks, grit chambers and screens), equalization basins, primary clarifiers, activated sludge aeration, coagulation by ferric chloride addition, secondary clarifiers, sand filtering, chlorination, dechlorination, and post aeration	2.9 MGD

(See **Attachment 2** for facility diagram and treatment process descriptions)

As part of the reissuance process, the permittee has requested to perform a pilot study to determine if the Natural Treatment System can provide dechlorination to the level required to protect water quality. Currently the permittee uses sodium bisulfite for dechlorination. The Natural Treatment System is a manmade wetland that was approved by the Department and constructed in 2008. The objective of the study is to determine the maximum TRC concentration that can enter the NST and still meet the TRC limitations in Part I.A. of the permit. During the study, the permittee proposes to reduce the amount of sodium bisulfite to determine if the NTS can adequately dechlorinate the wastewater stream prior to discharge to the river. The permittee has proposed testing up to a maximum TRC concentration entering the NTS of 3.5 mg/L. If the pilot study demonstrates that the NTS can provide the necessary levels of dechlorination, the facility is proposing to reduce use of sodium bisulfite and monitor the TRC concentration at the NTS influent in order to satisfy compliance with the permit and be protective of water quality. See **Attachment 14** for information on the NTS and the pilot study as proposed by the permittee.

10. **Sewage Sludge Use or Disposal**:
Sludge is usually sent directly to the belt presses for dewatering. However, sometimes the sludge is sent to the thickeners and then to the belt presses for dewatering. Eventually, the sludge solids are land applied by a third party at permitted facilities or landfilled.

11. **Discharge Location Description**:
The facility will discharge to James River. See **Attachment 3** for the Hopewell Topo map, 99-D.

12. **Material Storage**:
Materials are stored throughout the Park 500 site at both the processing plant and the treatment plant. Most materials are stored in containment areas or rooms that prevent stored materials from reaching state waters if a spill were to occur. All materials considered a threat to the environment are stored in containers and under roof at this facility.

13. **Ambient Water Quality Information**:
Ambient water quality data is compiled from station 2-JMS087.01, located on the James River approximately 1.3 miles upstream of the proposed discharge. The monitoring station was selected upon the advice of J. Palmore, Senior Environmental Planner, DEQ Piedmont Regional Office. See **Attachment 4** for monitoring data.

14. **Antidegradation Review & Comments:**

Tier 1 __X__ Tier 2 _____ Tier 3 _____

The State Water Control Board's Water Quality Standards includes an antidegradation policy (9 VAC 25-260-30). All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

The antidegradation review begins with a Tier determination. The receiving stream, James River, is considered to be a Tier 1 water body. This determination is based on the existence of the Richmond-Crater Water Quality Management Plan, which allocates BOD and ammonia to multiple dischargers in the segment for the purpose of maintaining dissolved oxygen concentrations at or above the level of the standard. The stream segment was assessed as a category 5A water in the 2008 305(b)/303(d) Water Quality Assessment Integrated Report. It is impaired for *E. coli* with the cause believed to be attributable to urban runoff and overflows from the City of Richmond's combined sewer. The *E. coli* bacteria TMDL is due in 2010. The stream segment is also impaired by nutrients, Chlorophyll-a, PCBs and failed the submerged aquatic vegetation (SAV) criteria. The TMDL for PCBs is due in 2014. See Item 25 below on TMDLs for more information.

15. **Site Inspection:** March 31, 2009. The site visit memo is included as **Attachment 5.**

16. **Effluent Screening & Limitation Development** The MSTRANTI Excel Spreadsheet was used to calculate acute and chronic WLAs. The WLAs are entered in to the STATS.exe statistical software application to determine the need for a permit limitation and calculate the limitation. **See Attachment 8** for Effluent Limit Development documentation.

Table 2. Basis for Effluent Limitations in Part I.A.1

Parameter	Limitation	Basis for Limitation
Flow	Monitoring Only	Not Applicable
pH	6.0 to 9.0 Standard Units	Water Quality Standards
$cBOD_5$	270 kg/d; 600 lb/d monthly average 540 kg/d; 1200 lb/d maximum	Best Professional Judgment (See **Attachment 7** for December 18, 1981 Permit Justification Memo)

TSS	200 kg/d; 450 lb/d monthly average 410 kg/d; 900 lb/d maximum	Best Professional Judgment (See **Attachment 7** for December 18, 1981 Permit Justification Memo)
Ammonia-N	41 kg/d; 92 lb/d monthly average 83 kg/d; 180 lb/d maximum	208 Richmond-Crater Water Quality Management Plan **(Attachment 6)**
Dissolved Oxygen	Feb 1 – May 31: 5.5 mg/L monthly min 6.0 mg/L weekly min 5.0 mg/L instantaneous min Jun 1 – Jan 31: 5.5 mg/L monthly min 4.0 mg/L weekly min 4.3 mg/L instantaneous min	Virginia Water Quality Standards, 9 VAC 25-260-185 and 208 Richmond-Crater Water Quality Management Plan **(Attachment 6)**
TRC	0.13 mg/L monthly average 0.27 mg/L maximum	Water Quality Standards
Dissolved Sulfide	Monitoring Only	Attachment A - Water Quality Monitoring Results

Input Data: In order to calculate the wasteload allocations for each of the toxic parameters, receiving stream, mixing, and effluent data are entered into the MSTRANTI.xls spreadsheet. Based on this information, acute and chronic wasteload allocations are calculated. As mentioned previously, ambient stream data is based on monitoring station 2-JMS087.01. Because the discharge is to a tidal segment of the river, dilution ratios are used instead of stream flows. Outfall 001 is equipped with a diffuser plate. GM00-2011 recommends using tidal faults of 50 total parts to 1 part effluent for chronic toxicity and 2 total parts to 1 part effluent for acute toxicity. In response to a request by the facility, M. Dale Phillips provided an alternate acute dilution ratio of 14:1 based on a Cormix-1 analysis, communicated in a memo dated November 18, 1992 (**Attachment 7**). Staff in the Office of Water Permits and Compliance Assistance confirmed that the Cormix-1 analysis result of 14:1 is 14 total parts to 1 part effluent. Therefore, the inputs to MSTRANTI are 1 part effluent, 13 parts river for acute analysis and 49 parts river for chronic analysis for a total of 14 and 50 parts, respectively. (Note that the MSTRANTI outputs would be the same if actual effluent flow of 2.9 MGD and stream flows based on 2.9 MGD and the mix ratios were entered). Effluent data is based on DMRs and Water Quality Monitoring required with the application. A discharge flow of 1 MGD was assumed.

Ammonia: The Richmond-Crater 208 Plan includes an effluent load limitation for ammonia as N. However, the STATS.exe program was run to determine if an ammonia limitation was needed based on toxicity of the effluent. A concentration value of 22.0944 mg/L was input into the program. The concentration value was based on the maximum load limit of 184 lbs/day divided by the lowest monthly average flow reported on the DMRs (for a conservative calculation) multiplied by the conversion factor 8.34. [184 lb/day * (0.998545 MGD * 8.34) = 22.0944 mg/L]. The evaluation indicated that no ammonia limit is necessary to protect against toxicity. Therefore, the ammonia limitation in the 2008 Plan is more restrictive and will be carried forward in the permit.

Total Residual Chlorine (TRC): The permittee uses sodium hypochlorite for color removal and during the 2004 permit cycle was required to perform a bacterial demonstration study to confirm the presence or absence of bacteria in the wastewater stream. Results of the study demonstrated the presence of bacteria, therefore, the facility is required to disinfect.

A limitation evaluation was conducted for TRC. The chronic and acute WLAs were calculated using the MSTRANTI Excel Spreadsheet. Acute and chronic WLA for TRC were calculated as 270 ug/L and 550 ug/L, respectively. Following the procedures in GM 00-2011, since the

WLAa was less than 4.0 mg/L, the actual WLA were entered into STATS.exe to determine the need for a permit limitation and calculate the limitation. A quantification level of 0.10 mg/L and a data point of 20000 ug/L were used as recommended by the VPDES permit manual. The evaluation produced recommended limitations of 133.818 ug/L (0.13 mg/L) for average monthly and daily maximum concentration of 270 ug/L (0.27 mg/L) in order to protect water quality. These limitations are more stringent than those in the 2004 permit; therefore the new limitations will be placed in the permit. Since the facility is a minor, industrial facility that discharges to a receiving stream segment that does not have an EPA approved TMDL, no bacteria limitation is being included at this time.

Water Quality Monitoring Results (See Attachment 9)

As part of the permit reissuance process, the permittee was required to perform effluent monitoring in accordance with the VPDES Permit Attachment A – Water Quality Monitoring table. The results indicated the presence of the pollutants listed in Table 3 below in the facility's effluent.

Table 3: Water Quality Monitoring Summary
Attachment A Monitoring

Parameter Name	WLA– Acute (ug/L)	WLA – Chronic (ug/L)	WLA HH – PWS (ug/L)	WLA HH – Other (ug/L)	Effluent Monitoring Results (ug/L)
Copper	160	340	65,000	NA	50
Iron	NA	NA	15,000	NA	630
Manganese	NA	NA	2,500	NA	110
Zinc	1,400	4,500	460,000	3,500,000	20
Chlorodibromomethane	NA	NA	210	17,000	37
Chloroform	NA	NA	18,000	1,500,000	326
Dichlorobromomethane	NA	NA	280	23,000	182
Beta Particle & Photon Activity (mrem/yr)	NA	NA	200	200	599 pCi/L
Chlorides	12,000,000	12,000,000	13,000,000	NA	351,000
Foaming Agents	NA	NA	25,000	NA	19
Hydrogen Sulfide	NA	100	NA	NA	2200
Nitrate as N	NA	NA	500,000	NA	1,340
Sulfate	NA	NA	13,000,000	NA	167,000
TDS	NA	NA	25,000,000	NA	2,190,000
E. coli	126 N/CmL – Geometric Mean 235 N/CmL – Single Sample Maximum				3 N/CmL

The pollutants listed in Table 3 above were detected in the final effluent. All other pollutants were reported as less than an acceptable DEQ QL and therefore presumed to be absent. Pollutants that are determined to be present and have either an acute and/or chronic wasteload allocation are analyzed using the STATS.exe program. Copper and zinc were analyzed using the STATS.exe program and it was determined that no limitation is necessary to protect water quality. See **Attachment 8** for the STATS.exe analysis.

Effluent concentrations for copper, iron, manganese, zinc, chlorodibromomethane, chloroform, dichlorobromomethane, chlorides, foaming agents, nitrate, sulfate, and total dissolved solids were below the Human Health and/or Human Health -Public Water Supply WLAs. Therefore, no further action is required.

The Beta Particle and Photon Activity concentration is unusually high. The permittee has previously explained elevated total Beta results by running a gamma spectroscopy analysis and demonstrating the presence of the naturally occurring Potassium-40 which is a Beta emitter. The potassium-40 is released during the tobacco manufacturing process. Additionally, the permittee does not use radioactive materials in the industrial process. The result obtained

can not be evaluated because the analytical results and the Human Health Standards units are not the same -pCi/l and mrems respectively. However, the results can be compared to the drinking water standard which is 50 pCi/L. During consultations with the Virginia Department of Health, it was determined that the 50 pCi/L standard excludes concentrations attributed from potassium-40. Staff determined that additional monitoring for Beta Particle and Photon Activity was appropriate in order to speciate the various beta emitters and determine the potassium-40 concentration. Lastly, the dilution ratios (50:1) used in the Human Health-PWS and Human Health waste load allocation calculations are very conservative when compared to the actual freshwater flows.

A condition was included in the draft permit asking the permittee to monitor for Beta Particle and Photon Activity again, and provide an analysis showing the speciation of beta emitters. The permittee performed the testing prior to the end of the public comment period. The speciation test revealed that the only detectable isotope in the effluent sample was potassium-40. The results are included in **Attachment 15**.

During the effluent characterization process, the laboratory reported total sulfides present in the effluent and used a conversion method calculation in an attempt to assess potential hydrogen sulfide (H_2S) levels. However, the accuracy and precision of using total sulfide results for developing limits for H_2S have recently come under question. According to Standard Methods, the unionized H_2S "can be calculated from the concentration of dissolved sulfide, the sample pH, and the conditional ionization constant of H_2S." Based on the above, it now appears to be more appropriate to specify that results be reported as dissolved sulfide. To provide data to evaluate the potential presence of H_2S and need for a limit, dissolved sulfide monitoring is required once per six months by grab sample for this permit re-issuance.

The permittee indicated that other parameters are present in the effluent as listed in Form 2C. There are no water quality standards or human health standards for these parameters; therefore no further action is required.

Table 4: Other Parameters Believed to be Present as Indicated on Form 2 C

Parameter Name	Effluent Monitoring Results (mg/L)
Bromide	0.9
Color	156 alpha unit
Fecal Coliform	33 N/CmL
Nitrate-Nitrite*	1.36
Total Organic Nitrogen	17.8
Oil & Grease	19
Sulfite	2.0
Boron	0.120
Cobalt	0.0027
Magnesium	31
Molydenum	0.0034

*See Table 3 for review of Nitrate results

17. **Antibacksliding Statement**: All limitations are at least as stringent as in the previous permit.

18. **Compliance Schedules:** The TRC limitation is more stringent than the limitation in the 2004 permit. However, no compliance schedule is being included because the facility is already demonstrating compliance with the new TRC limits requirements of the Compliance Reporting Special Condition.

Additionally, the DO limitations have also become more stringent than required in previous permits. DMR data indicates the facility operations will need to be changed in order to meet the new limitations. The facility has requested an 18-month schedule of compliance in order to

make the necessary changes to the plant's operation and install technology, if necessary, to meet the new DO limitations. The VPDES Permit Regulation allows for schedules of compliance, when appropriate, which will lead to compliance with the Clean Water Act, the State Water Control Law and regulations promulgated under them. See discussion in item 21 above.

19. **Special Conditions:**

B. **Additional Effluent Limitations and Monitoring Requirements for Disinfection**
Rationale: Required by Virginia Water Quality Standards, 9VAC 25-260-170 B. Bacteria: other waters. Also, 40 CFR 122.41(e) requires the permittee, at all times, to properly operate and maintain all facilities and systems of treatment in order to comply with the permit. This ensures proper operation of chlorination equipment to maintain adequate disinfection.

C.1. Special Condition: Gravity Filters
Rationale: This special condition is included because the gravity filters occasionally become clogged with crustaceans, which breed in the secondary treatment system. This has caused operational problems because of hydraulic backup. Therefore this special condition will allow maximum operating flexibility.

C.2. Special Condition: Tobacco Flavors
Rationale: This special condition authorizes the use of tobacco flavors from other Phillip Morris facilities as food supplement for the Park 500 WWT facility. During production shutdowns, nutrient supplements are needed at Park 500 to maintain a viable microbiological population.

C.3. Special Condition: Dissolved Oxygen Calculations
Rationale: This special condition explains the dissolved oxygen limitations and reporting requirements.

C.4. Notification Levels
Rationale: Required by VPDES Permit Regulation, 9 VAC 25-31-200 A for all manufacturing, commercial, mining, and silvicultural dischargers.

C.5. Licensed Operator Requirement
Rationale: The VPDES Permit Regulation, 9 VAC 25-31-200 C and the Code of Virginia § 54.1-2300 et seq, Rules and Regulations for Waterworks and Wastewater Works Operators (18 VAC 160-20-10 et seq.), require licensure of operators.

C.6. Materials Handling/Storage
Rationale: 9 VAC 25-31-50, Section A. prohibits the discharge of any wastes into State waters unless authorized by permit. Code of Virginia Section 62.1-44.16 and 62.1-44.17 authorizes the Board to regulate the discharge of industrial waste or other waste.

C.7. Compliance Reporting
Rationale: Authorized by VPDES Permit Regulation, 9 VAC 25-31-190 J 4 and 220 I. This condition is necessary when pollutants are monitored by the permittee and a maximum level of quantification and/or a specific analytical method is required in order to assess compliance with a permit limit or to compare effluent quality with a numeric criterion. The condition also establishes protocols for calculation of reported values.

C.8. Effluent Monitoring Frequencies
Rationale: Permittees are granted a reduction in monitoring frequency based on a

history of permit compliance. To remain eligible for the reduction, the permittee should not have violations related to the effluent limitations for which reduced frequencies were granted. If permittees fail to maintain the previous level of performance, the baseline monitoring frequencies should be reinstated for those parameters that were previously granted a monitoring frequency reduction.

C.9. Reopeners

Rationale:

a. Section 303(d) of the Clean Water Act requires that total maximum daily loads (TMDLs) be developed for streams listed as impaired. This special condition is to allow the permit to be reopened if necessary to bring it into compliance with any applicable TMDL approved for the receiving stream. The re-opener recognizes that, according to section 402(o)(1) of the Clean Water Act, limits and/or conditions may be either more or less stringent than those contained in this permit. Specifically, they can be relaxed if they are the result of a TMDL, basin plan, or other wasteload allocation prepared under section 303 of the Act.

b. 9 VAC 25-40-70 A authorizes DEQ to include technology-based annual concentration limits in the permits of facilities that have installed nutrient control equipment, whether by new construction, expansion or upgrade.

c. 9 VAC 25-31-390 A authorizes DEQ to modify VPDES permits to promulgate amended water quality standards.

d. VPDES Permit Regulation, 9 VAC 25-31-220 D requires effluent limitations to be established which will contribute to the attainment or maintenance of the water quality standards.

C.10. Facility Closure

Rationale: Required by Code of Virginia §62.1-44.19. This condition is used to notify the owner of the need for a closure plan where a treatment works is being replaced or expected to close.

C.11. CER for Nutrient Removal

Rationale: 9 VAC 25-40-70 A authorizes DEQ to include technology-based annual concentration limits in the permits of facilities that have installed nutrient control equipment, whether by new construction, expansion or upgrade.§ 62.1-44.16 of the Code of Virginia requires industrial facilities to obtain DEQ approval for proposed discharges of industrial wastewater.

REMOVED FROM FINAL PERMIT PRIOR TO ISSUANCE

Beta Particle and Photon Activity Monitoring

~~**Rationale:** As part of the permit application, the permittee provided unusually high sampling results for Beta Particle and Photon Activity. Previous monitoring has indicated that potassium-40, which is a natural beta emitter, contributes to the high concentration. Therefore, the permittee is being asked to monitor for Beta Particle and Photon Activity again, and provide an analysis showing the speciation of beta emitters.~~ See Item 24 Staff Comments – Public Comments.

C.12. Schedule of Compliance

Rationale: The VPDES Permit Regulation at 9VAC 25-31-250 allows for schedules of compliance, when appropriate, which will lead to compliance with the Clean Water Act,

the State Water Control Law and regulations promulgated under them. See discussion in item 18 above.

D. Whole Effluent Toxicity Testing

Rationale: VPDES Permit Regulation, 9 VAC 25-31-210 and 220 I, requires monitoring in the permit to provide for and assure compliance with all applicable requirements of the State Water Control Law and the Clean Water Act.

The 2004 permit required annual acute toxicity testing. All of the test results from the 2004 were higher than the toxicity criterion of 23.6% established in the 2004 permit; therefore, the effluent passed the acute toxicity test and the plant is in compliance with the Toxics Management Program requirements in the 2004 permit. Continuation of the annual acute toxicity testing is recommended.

Additionally, after consultation with the toxics program manager in the Office of Water Permitting and Compliance Assistance, chronic toxicity testing is recommended quarterly for the first year of the permit term, and annual for the remaining period of the permit. See **Attachment 11** for WET data evaluation and additional information.

E. Total Residual Chlorination Study and Monitoring Requirements

Rationale: The permittee requested permission with the permit application to perform a pilot study to determine if the Natural Treatment System can provide dechlorination to the level required to protect water quality. The objective of the study is to determine the maximum TRC concentration that can enter the NST and still meet the TRC limitations in Part I.A. of the permit. During the study, the permittee proposes to reduce the amount of sodium bisulfite to determine if the NTS can adequately dechlorinate the wastewater stream prior to discharge to the river. The permittee has proposed testing up to a maximum TRC concentration entering the NTS of 3.5 mg/L. If the pilot study demonstrates that the NTS can provide the necessary levels of dechlorination, the facility is proposing to reduce use of sodium bisulfite and monitor the TRC concentration at the NTS influent in order to satisfy compliance with the permit and be protective of water quality. See **Attachment 14** for information on the NTS and the pilot study as proposed by the permittee.

Part II, Conditions Applicable to All Permits

Rationale: VPDES Permit Regulation, 9 VAC 25-31-190 requires all VPDES permits to contain or specifically cite the conditions listed.

20. **NPDES Permit Rating Work Sheet:** Total Score 53 (See **Attachment 13)**

21. **Changes to the Permit:**

Item		RATIONALE
Permit Cover Page: Initial paragraph; signatory authority		Updated language to reflect current agency guidance that incorporates the permit application as part of the permit.
Special Standards:	Removed NEW-18	Updated to reflect that NEW-18 has been repealed from the WQS.
	Added bb	Updated to reflect the applicability of the chlorophyll-a criteria

Part I.A.1 and Part I.A.2						
Parameter Changed	**Monitoring Requirement Changed**		**Effluent Limits Changed**		**Reason for Change**	**Date**
	From	To	From	To		
pH	1/day	5/week	No change		This facility has maintained performance levels that, according to guidance, qualify it for reductions in monitoring requirements for pH, $cBOD_5$, and TSS. (See Attachmend 10). Also, revised to reflect GM 06-2016 regarding significant digits.	4/09
cBOD5	No change		273 mo avg 545 max (kg/d)	270 mon avg 540 max (kg/d)		
TSS	3/week	1/week	205 mo avg 409 max (kg/d)	200 mon avg 410 max (kg/d)		
DO – Part I.A.1 (until completion of the compliance schedule)	No Change		No change		-	-
DO – Part I.A.2	No change		4.6 mg/L instantaneous minimum	Feb 1 – May 31: 4.6 mg/L monthly 6.0 mg/L weekly 5.0 mg/L instant Jun 1 – Jan 31: 5.5 mg/L monthly 4.0 mg/L weekly 4.3 mg/L instant	Updated to reflect Dissolved Oxygen Criteria to protect designated uses from the impacts of nutrients and suspended sediment in the Chesapeake Bay and its tidal tributaries - WQS. (9 VAC 25-260-185 A.)	4/09
TRC	No Change		0.14 mo avg 0.29 max (mg/L)	0.13 mo avg 0.27 max (mg/L	Limitation revised due to correction of 1Q10 dilution ratio and resulting change in MSTRANTI WLA calculation	4/09
Ammonia	No Change		41.7 kg/day 92.0 lb/day 83.4 kg/day 184 lb/day	41 kg/day 92 lb/day 83 kg/day 180 lb/day	Revised to reflect GM 06-2016 regarding significant digits. Note that 41.7 kg/d is not rounded to 42 because of the need to be in conformance with the 208 Richmond Crater WQMP.	4/09
Dissolved Sulfide	-	1 per 6 months	-	-	Required to provide data to evaluate the potential presence of H_2S and need for a dissolved sulfide limit in future permit re-issuances.	4/09
Total Phosphorus Total Phosphorus (kg/mon) Total Phosphorus (kg/ cal yr)	2/Month 1/Month 1/Month 2/Month 2/Month	REMOVED	2.0 NL 4,527 NL NL	REMOVED	Removed to reflect GM 07-2008, Amendment No. 2 - Permitting Considerations for Facilities in the Chesapeake Bay	4/09

Orthophosphate TKN Nitrate plus Nitrite Total Nitrogen Total Nitrogen (kg/mon) Total Nitrogen (kg/cal yr)	2/Month 2/Month 1/Month 1/Month		NL NL NL 75,740		Watershed. Facility accepted load limitations therefore, nutrient limitations and monitoring requirements in the general permit are applicable.	

FROM	TO	RATIONALE
-	Footnote (1)	New. Added language to reflect current VPDES Permit Manual dated February 16, 2007.
-	Footnote (2)	New. Added language to reflect current VPDES Permit Manual dated February 16, 2007.
-	Footnote (3)	New. Added language to clarify 1/6month monitoring requirement.
Part I.A.3	Footnote (4)	No Change.
Part I.A.7	Footnote (5)	No Change.
-	Part I.A.1.a/ Part I.A.2.a	New. Added to reflect GM 07-2008, Amendment No. 2 - Permitting Considerations for Facilities in the Chesapeake Bay Watershed.
-	Part I.A.1.b/ Part I.A.2.b	New. Added to provide clarification where final effluent samples shall be taken.
Part I.A.8	Part I.A.1.c/ Part I.A.2.c	No Change.
Part I.A.2	-	Removed. Acronym for TIRE spelled out in Part I.A.1 table.
Part I.A.4	-	Removed. Bacteria study and TRC schedule of compliance completed. TRC limitation became effective June 2008.
Part I.A.5	-	Removed to reflect GM 07-2008, Amendment No. 2 - Permitting Considerations for Facilities in the Chesapeake Bay Watershed. Nutrient monitoring and calculation requirements in the GP are applicable.
Part I.A.6	-	Removed. Since there are no parameters that are monitored 2/Month, definition is not necessary.

Special Condition Changes:

FROM	TO	RATIONALE
Part I.B	Removed	**Bacterial Effluent Limitations and Monitoring Requirements** Bacteria study and TRC schedule of compliance completed. TRC limitation became effective June 2008.
-	Part I.B.	**Additional Effluent Limitations and Monitoring Requirements for Disinfection** Added language to reflect current VPDES Permit Manual dated February 16, 2007.
Part I.C.1	Removed	**Schedule of Compliance for Total Residual Chlorine**. Bacteria study and TRC schedule of compliance completed. TRC limitation became effective June 2008.
Part I.C.2	Part I.C.1	**Gravity Filters** No change
Part I.C.3	Part I.C.2	**Tobacco Flavoring** No Change
Part I.C.4	Part I.C.3	**Dissolved Oxygen Calculation** Revised to reflect the additional DO monitoring limitations and associated reporting
Part I.C.5	Part I.C.4	**Notification Levels** No Change
Part I.C.6	Part I.C.5	**Licensed Operator Requirement** No Change
Part I.C.7	Part I.C.6	**Materials Handling/Storage:** No Change
Part I.C.8	Part I.C.7	**Compliance Reporting:** Updated language to reflect current agency guidance on compliance reporting and significant digits.
Part I.C.9	Part I.C.8	**Effluent Monitoring Frequencies** Updated language to reflect current VPDES Permit Manual dated February 16, 2007.

-	Part I.C.9	**Reopeners** Added to reflect current VPDES Permit Manual dated February 16, 2007 and GM 07-2008 Amendment 2.
-	Part I.C.10	**Facility Closure** Included per PRO VPDES decisions on December 2, 2008
-	Part I.C.11	**CER for Nutrient Removal** Added to reflect GM 07-2008, Amendment No. 2 - Permitting Considerations for Facilities in the Chesapeake Bay Watershed.
-	~~Part I.C.12~~	~~**Beta Particle and Photon Activity Monitoring** Included to collect data to determine the source of beta particle and photon activity measurements.~~ Requirement fulfilled during the public comment period, therefore removed from final permit prior to issuance. See Item 24 below for discussion.
-	Part I.C.12	**Schedule of Compliance** More stringent DO limitations require facility to make changes in order to meet new limitations.
Part I.C.11	Removed	**Water Quality Monitoring Attachment A** Attachment A is no longer included as a permit requirement, but is instead addressed with the permit re-issuance application process.
Part I.C.12	Removed	**Nutrient Requirements** Removed to reflect GM 07-2008, Amendment No. 2 - Permitting Considerations for Facilities in the Chesapeake Bay Watershed. Facility accepted load limitations; therefore, nutrient limitations and monitoring requirements in the general permit are applicable.
Part I.C.13	Removed	
Part I.C.14	Removed	
Part I.C.15	Removed	
Part I.C10	Part I.D	**Whole Effluent Toxicity Monitoring** Updated to include current toxicity monitoring language and to require chronic toxicity monitoring per the advice of OWPCA.
-	Part I.E	**Total Residual Chlorination (TRC) Study and Monitoring Requirements** Included at the request of the permittee to allow pilot study for the use of Natural Treatment System as an alternative dechlorination method.

22. **Variances/Alternate Limits or Conditions**: None

23. **Public Notice Information required by 9 VAC 25-31-280 B**:
All pertinent information is on file and may be inspected, and copied by contacting:

Ms. Jaime Bauer at:
Virginia DEQ Piedmont Regional Office
4949-A Cox Road
Glen Allen, VA 23060
Telephone No. (804) 527-5015
Email Address: Jaime.Bauer@deq.virginia.gov

DEQ accepts comments and requests for public hearing by e-mail, fax or postal mail. All comments and requests must be in writing and be received by DEQ during the comment period. Submittals must include the names, mailing addresses and telephone numbers of the commenter/requester and of all persons represented by the commenter/requester. A request for public hearing must also include: 1) The reason why a public hearing is requested. 2) A brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit. 3) Specific references, where possible, to terms and conditions of the permit with suggested revisions. DEQ may hold a public hearing, including another comment period, if public response is significant and there are substantial, disputed issues relevant to the permit.

The public may review the draft permit and application at the DEQ Piedmont Regional Office by appointment.

24. **Additional Comments**:

Previous Board Action: The permit effective June 17, 2004 was brought before the State Water Control Board (SWCB) for its consideration. The permit was controversial because it was the first VPDES permit in the state to incorporate Chesapeake Bay nutrient reduction strategies. During the meeting, staff recommended the Board to approve the permit as presented to the Board and allow the Director or his designee to sign the permit on behalf of the Board. Based on staff recommendations and input from the public, the Board made the final decision to issue the permit as recommended by the staff.

Staff Comments:

- The facility made the following three requests with the permit application for alternative compliance methods for Virginia Environmental Excellence Program E3 &E4 facilities:
  - Reduced Monitoring Frequencies. This facility was evaluated for reduced monitoring. See **Attachment 10**.
  - Pilot Study to demonstrate the Natural Treatment System as a method of dechlorination. See **Attachment 14.** Part I.E of the permit includes conditions that approve a pilot study.
  - Removal of nutrient limitations and monitoring from the individual permit that are now covered by the Chesapeake Bay Watershed General Permit. Nutrient limitations and monitoring were removed from the individual permit. See Item 26 below.

- Of the Special Standards which are listed for Section 1o of the James River, NEW-18 has been repealed. Special Standard bb refers to Chlorophyll A levels in the James River and is addressed by nutrient limitations in the "General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Watershed in Virginia," registration number VAN040084. The Public Water Supply standards are protected through the disinfection requirements included in Part I.B.

- This facility is permitted also under the General Permit for Discharges of Storm Water Associated with Industrial Activity (VAR050586).

- In a letter dated June 1, 2009, the permittee provided comments on and requested changed to the draft permit and fact sheet. Most of the comments were corrections to the operations or request for clarification. The official request and agency response can be found in the permit correspondence file. Two substantial requests for changes to the permit were the rewording of the Materials/Handling Storage condition and removal of the Operations and Maintenance Manual requirement. The permittee believes that the Material/Handling Storage condition is inconsistent with the VPDES general permit for storm water discharges associated with industrial activity, and the accompanying storm water pollution prevention plan. The alternative language requires the facility to handle, dispose of, and/or store other materials and wastes "in a manner that is consistent with reasonable Best Management Practices." .

  Additionally, the O&M Manual requirements have been removed from the draft permit. The permittee indicated the following systems and programs are in place to ensure proper operation of the wastewater treatment plant (WWTP):

  - Utilization of a CMMS (SAP Maintenance Software System) work order and preventive maintenance software system to facilitate proper maintenance of equipment at the Park 500 wastewater treatment plant (WWTP). The CMMS has been programmed with the preventative maintenance tasks needed to

maintain the equipment at the WWTP in proper working order. It routinely generates preventative maintenance work order requests based upon the Original Equipment Manufacture Manual for the equipment in use. It also monitors our critical spare parts inventory and processes requests to re-order spare parts.

- Certification of the laboratory under the Virginia Environmental Laboratory Accreditation Program (VELAP) is in the process.
- The Park 500 Plant, including the wastewater treatment process, is ISO 14000 certified, and participates in the Virginia Environmental Excellence Program (VEEP) at the E4 level.
- The wastewater treatment plant (WWTP) has procedures in place for the collection of all data needed to comply with the permit conditions. Park 500 has an Excel database that collects and manages all data.

Public Comment: During the public comment period, the permittee performed the Beta Particle and Photon Activity speciation monitoring that was originally included in previous draft versions of the permit and submitted a comment requesting removal of the requirement before final permit issuance. (See **Attachment 15** for the speciation test results and the permittee request for removal of the condition.) The monitoring was being required as a result of a high detection of Beta Particle and Photon Activity in the effluent during the water quality monitoring for permit reissuance. The drinking water standard for Beta Photon Activity is 50 pCi/L; however, during consultations with the Virginia Department of Health, it was determined that the 50 pCi/L standard excludes concentrations attributed from potassium-40. The permit required monitoring was ordered to isolate and analyze the beta emitting isotopes detected in the effluent. Previous monitoring and knowledge of tobacco processing indicated that the high concentration of Beta Particle and Photon Activity was the result of potassium-40 isotopes taken up from soil during tobacco growth and released during the manufacturing process. The test results indicate the only detectable beta emitting isotope is potassium-40; therefore, since the requirement has been fulfilled by the permittee and removal of the condition does not make the permit less stringent, the condition was removed from the final version of the permit.

25. **303(d) Listed Segments (TMDL)**:

This facility discharges to the James River. The stream segment receiving the effluent was assessed as a Category 5A in the 2008 305(b)/303(d) Water Quality Assessment Integrated Report. This segment is considered impaired for chlorophyll a (nutrient concerns) submerged aquatic vegetation criteria, and bacteria (*E.coli)* water quality standards as well as for PCB presence in fish tissues. Additionally, this segmented is considered to have "observed effects for Fish Consumption due to kepone, mercury, and arsenic." A TMDL has not been prepared or approved for this segment and is scheduled to be completed by 2010 and 2014. The permit included disinfection requirements that require compliance with bacteria standards prior to discharge. The permit is also permitted under the Watershed General Permit (VAN040084) which establishes load limitations for total phosphorus and total nitrogen. Given these limits this facility can neither cause nor contribute to the observed violation of the standards. The permit contains a re-opener condition that may allow these limits to be modified, in compliance with section 303(d)(4) of the Act once a TMDL is approved. Additionally, PCB concentrations were reported as less than an acceptable DEQ quantifiable limit in the water quality monitoring results submitted with the application for permit reissuance and therefore presumed to be absent from the effluent.

The TMDL Fact Sheets are included in **Attachment 12**.

26. **Nutrient Requirements** This facility is registered under the Watershed General Permit Number VAN040084. All nutrient permit requirements are addressed by coverage under the general permit. The facility accepted the given nutrient load limitations. The total phosphorous concentration limitation of 2.0 mg/L was included in the 2004 permit because of nutrient enriched water standards (NEW-18). NEW-18 has been repealed. Additionally, the nutrient concentrations based on plant flow and load limitations are less 2.0 mg/L; therefore the requirements of the general permit are more stringent.

27. Summary of Attachments:

1. Flow Frequency Memo
2. Process Descriptions & Diagrams
3. Topo Map
4. Ambient Stream Data for Station 2-JMS087-01
5. Site Visit Memo
6. 208-Richmond-Crater Water Quality Management Plan
7. Dilution Determination Memo – 11/18/92 and
   Justification for Permit Limitations Memo – 12/18/81
8. Effluent Limitation Development:
   MSTRANTI Source Table
   MSTRANTI.xls
   STATS.exe Analyses
9. DMR Data
10. Reduced Monitoring Evaluation
11. Whole Effluent Toxicity Testing Evaluation
12. TMDL Fact Sheet
13. NPDES Permit Rating Spreadsheet
14. Natural Treatment System Description and Pilot Study Proposal
15. Beta Particle and Photon Activity Results